

-What is claimed is:

1. A video decoder for providing instant replay,  
comprising:

5 a memory for storing compressed video information;  
a write controller for receiving the compressed video  
information and for writing it to the memory;

10 a marker for marking portions of the received  
compressed video with tags corresponding to the location in the  
memory of where the portions of the compressed video information  
are stored;

a decompressor for

15 i) receiving the compressed video information and  
the tags from the memory,

ii) decompressing the compressed video information,  
and

iii) storing the tags;

a display processor for

20 i) receiving the tags and the decompressed video  
information,

ii) displaying the decompressed video information,  
and

iii) storing the tag of a recently displayed  
decompressed frame; and

25 a read controller for, upon request for instant replay,  
receiving the tag of a recently displayed decompressed frame and

for accessing the locations in the memory corresponding to a sequence of previously displayed compressed frames for redisplay by the display processor.

5 2. The video decoder in accordance with claim 1, wherein the tags are pointer values which point to the addresses in the memory of the beginning of the frames of compressed video information.

10 3. The video decoder in accordance with claim 2, wherein the compressed video information includes anchor frames and non-anchor frames and the tags indicate the anchor frames.

15 4. The video decoder in accordance with claim 1, further including i) a pointer store for storing pointer values which indicate the addresses in the memory of where the beginning of the frames of compressed video information are stored; and ii) a mapper which maps the most recently displayed decompressed frame tag to the pointer value of the address in the memory where the  
20 most recently displayed frame is stored.

5. The video decoder in accordance with claim 4, wherein the compressed video information includes anchor frames and non-anchor frames and the pointer values indicate the anchor frames.

25 6. The video decoder in accordance with claim 4, wherein the

compressed video includes anchor frames and non-anchor frames and the read controller includes means for selecting an address in the memory which holds an anchor frame and for providing the anchor frame as the first frame of the sequence of frames to be  
5 redisplayed.

7. A video decoder for providing instant replay, comprising:

a rate buffer for storing compressed video information  
10 for decode and display in real time;

an instant replay memory for storing the compressed video information for instant replay;

a write controller for receiving the compressed video information and for writing the compressed video information into  
15 the rate buffer and the instant replay memory;

a marker for marking frames of the compressed video information stored in the rate buffer with tags, and for marking the same frames stored in the instant replay memory with corresponding tags;

20 a decompressor for decompressing the compressed video information received from the rate buffer;

a display processor for displaying the decompressed video information and for storing the tag of a recently displayed frame of decompressed video information; and

25 an instant replay memory reader for receiving the tag of the most recently displayed frame of decompressed video

information and for reading from the instant replay memory the most recently displayed compressed frame, and for providing the most recently displayed compressed frame to the decompressor and display processor for redisplay.

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8. A method of providing instant replay, comprising the steps of:

writing compressed video information to a memory;

storing the compressed video information in the memory;

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marking portions of the compressed video information with different tags which correspond to locations in the memory of where the portions of the compressed video information are stored;

decompressing the compressed video information;

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storing the tags of the decompressed video information in the decompressor;

displaying the decompressed video information;

storing the tag of a recently displayed decompressed frame;

receiving a request for instant replay;

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correlating the tag of the recently displayed decompressed frame to the location in memory of the corresponding compressed frame of video information; and

retrieving the most recently displayed compressed frame and a sequence of previously displayed frames for redisplay.

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9. The method in accordance with claim 8, wherein the step of

retrieving the sequence retrieves a sequence of frames which correspond to a preselected duration of instant replay.

10. The method in accordance with claim 8, wherein the compressed video information includes anchor frames and non-anchor frames and wherein the step of correlating further includes the step of locating the nearest previously displayed anchor frame to the first frame to be redisplayed and beginning redisplay with this nearest previously displayed anchor frame.

11. The method in accordance with claim 10, wherein each tag indicates the location in memory of the anchor frame of the first frame of the sequence to be redisplayed and the step of retrieving begins by retrieving this anchor frame.

12. The method in accordance with claim 10, wherein the step of correlating includes the step of mapping the tag of the most recently displayed frame to a pointer value, which pointer value indicates a first anchor frame to be redisplayed.

13. The method in accordance with claim 10, wherein the step of decompressing decompresses the video information in accordance with MPEG 2.

14. A video decoder for providing instant replay of video

that has been compressed and variable length encoded, comprising:

a memory for storing the variable length encoded compressed video in a manner that takes advantage of the variable length encoded video by optimizing the use of the memory;

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a tag inserter, for inserting marker tags into the compressed video stream which reference locations in memory where portions of the video is stored;

a decompressor for decompressing the compressed video;

a correlator for using the marker tags to correlate

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decompressed portions of the video to the location in memory of the corresponding compressed portions.

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